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# (12) UK Patent Application (19) GB (11) 2 207 103<sup>(13)</sup>A

(43) Application published 25 Jan 1989

(21) Application No 8717414

(22) Date of filing 23 Jul 1987

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(51) INT CL<sup>4</sup>  
B60D 1/06 1/14

(52) Domestic classification (Edition J):  
B7T RF

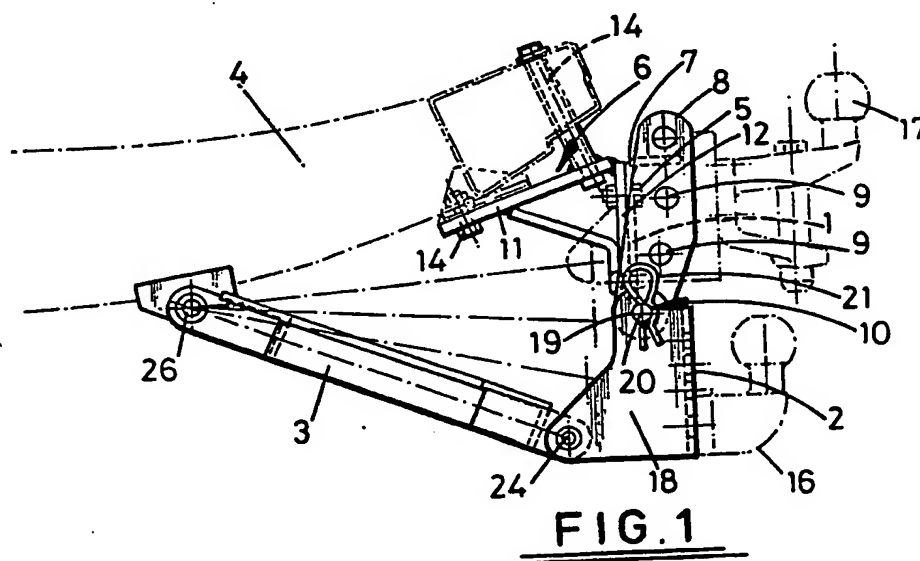
(56) Documents cited  
None

(58) Field of search  
B7T  
Selected US specifications from IPC sub-class  
B60D

(54) A support frame for a vehicle coupling

(57) A frame for a vehicle coupling comprises a first plate 1 adapted for connection to the chassis of a vehicle, and a second plate 2 adapted for connection to a vehicle coupling member 16, 17 and releasably connected to the first plate. At least one stay 3 is pivotally connected at one end to the second plate and adapted for pivotal connection to the chassis of the vehicle so that in use, on release of the second plate from the first plate, the second plate can be pivoted by means of the stay from a first position with respect to the vehicle chassis towards the first plate and anchored in a second position which is closer to the vehicle chassis than the first position.

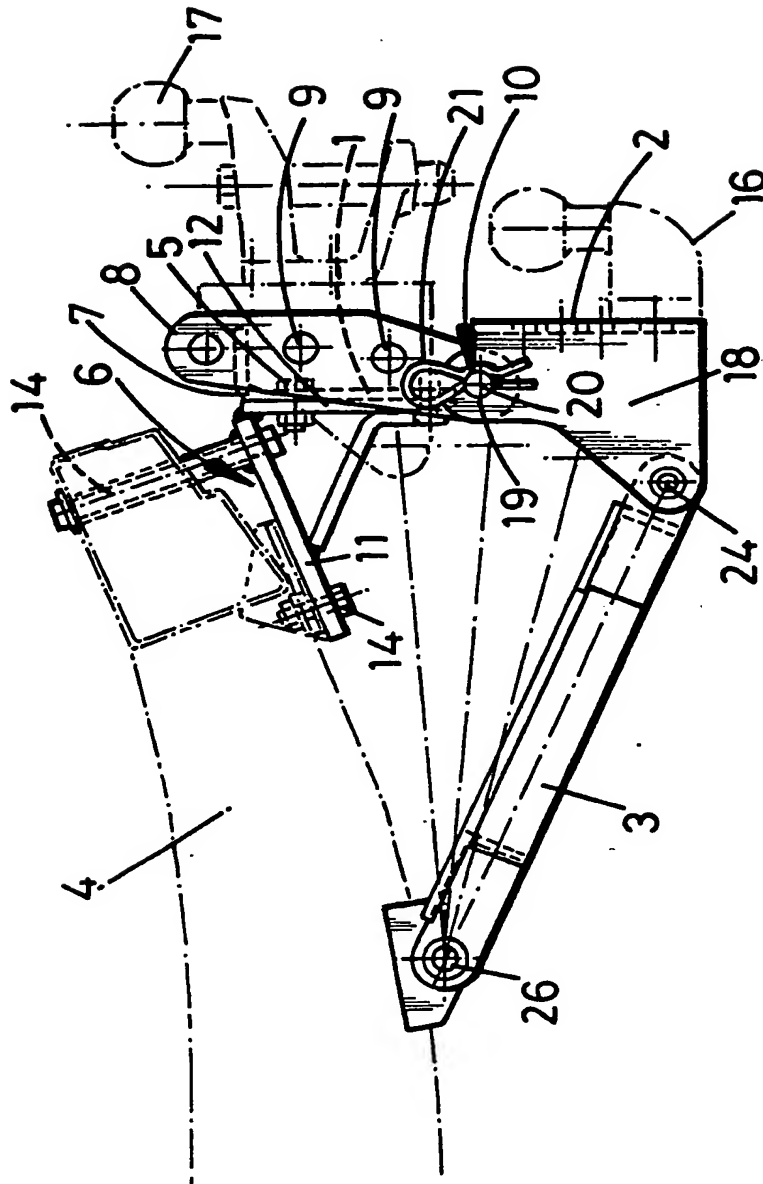
The second plate can be anchored to the first plate at a selected one of a plurality of positions, and is provided with means allowing a coupling member to be secured thereto in a selected one of a number of positions.



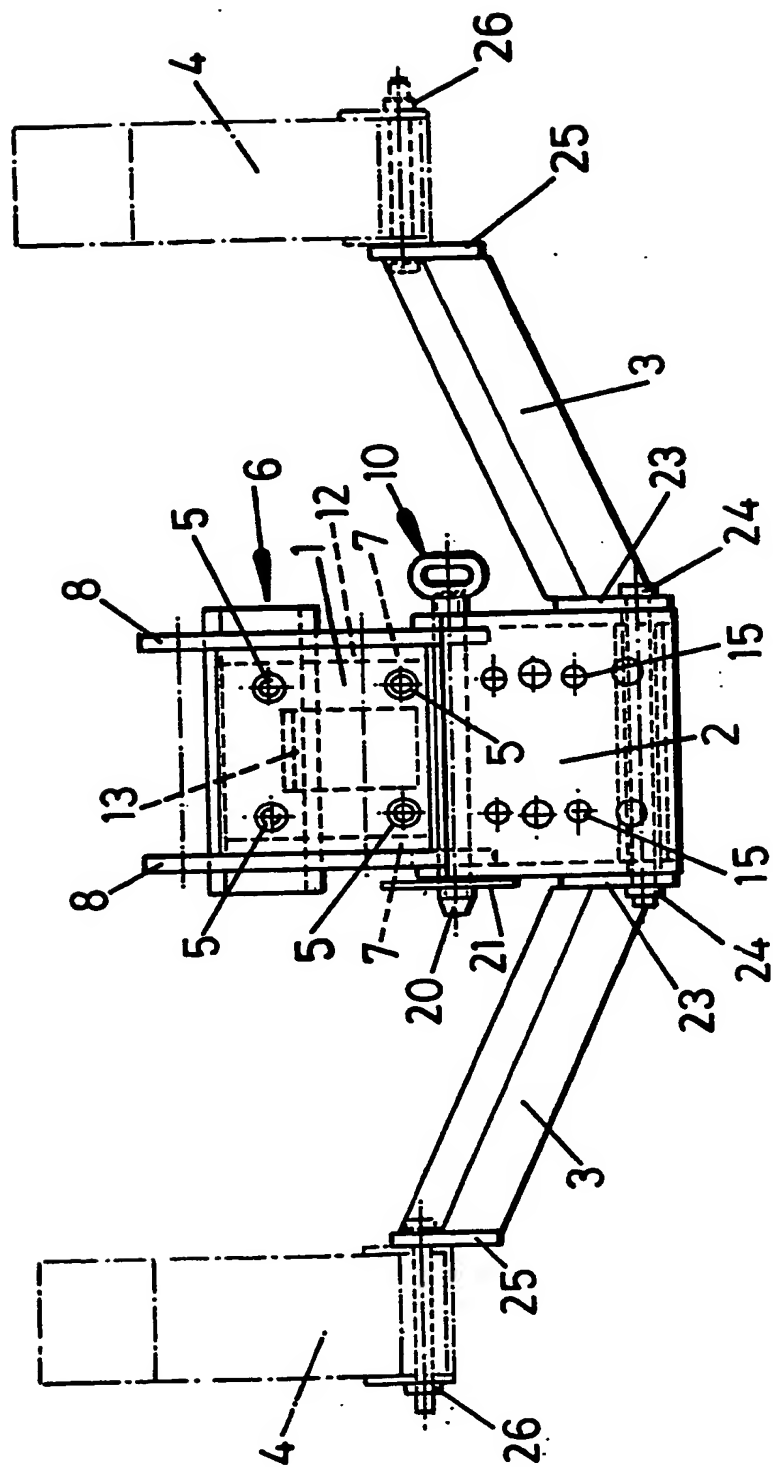
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**FIG. 1**



A FRAME FOR A VEHICLE COUPLING

The present invention relates to a frame for a vehicle coupling.

In order to couple a trailer to a motor vehicle, it is usual to attach a rigid frame to the rear of the vehicle on which frame is mounted a coupling hook or similar vehicle coupling device. The trailer is then attached to the coupling hook.

There are two disadvantages of current arrangements of frames and coupling hooks. Firstly, when the coupling hook is not in use and the motor vehicle to which it is attached is travelling over rough ground, the hook tends to plough the ground. Secondly, the frame and hook are unsightly and unnecessarily project from the rear of a motor vehicle when not in use.

The object of the present invention is to provide a frame for a vehicle coupling which overcomes the aforementioned disadvantages.

According to the present invention, there is provided a frame for a vehicle coupling comprising a first plate adapted for connection to the chassis of a vehicle, a second plate adapted for connection to a vehicle coupling member and releasably connected to the first plate, and at least one stay pivotally connected at one end to the second plate and adapted for pivotal connection to the chassis of the vehicle so that in use, on release of the second plate from the first plate, the second plate can be pivoted by means of the stay from a first position with respect to the vehicle chassis towards the first plate and anchored in a second position which is closer to the vehicle chassis than the first position.

Preferably, the second plate can be anchored in

the second position by being releasably connected to the first plate.

Preferably also, in the second position, the second plate substantially covers one side of the first plate.

Preferably also, two stays are provided and pivotally connected to the second plate, one on each of two opposing sides thereof.

The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a side view of a frame and a vehicle coupling member in a first position and, in dot dashed lines in a second position; and

Fig. 2 is an end view of the frame shown in Fig. 1.

The frame comprises a first plate 1, a second plate 2, and two stays 3 which are adapted, as will be described, for pivotal connection to the rear of a vehicle chassis 4, which is shown in dot dashed lines in Figs. 1 and 2.

The first plate 1 is of L-section and bolted as at 5 to an attachment bracket 6 for connection to the chassis 4. Welded to opposed edges 7 of the plate 1 are flanges 8 which are provided with a series of pairs of aligning holes 9 capable of being engaged by a pin arrangement 10 for the releasable connection thereto of the second plate 2.

The attachment bracket 6 comprises three plates 11, 12 and 13 which are welded together. The plate 11 is provided with holes through which bolts 14 can be passed to secure the bracket 6 to the vehicle chassis 4, as shown in Fig. 1. The plate 12 is angled with respect to the plate 11 and is provided with holes for connection to the first plate 1 by

means of the bolts 5. The third plate 13 forms a strut which is welded between the plates 11 and 12 to maintain the angle between them and strengthen the whole brackets 6. Typically, the angle between the plates 11 and 12 will be determined by the make and model of the vehicle to which the coupling frame is to be attached so that the bracket 6 can be secured to a suitable portion of the vehicle chassis 4 and allow the plate 12 and thereby the first plate 1 bolted thereto to depend from the chassis 4 in a substantially vertical plane.

The second plate 2 is provided with an arrangement of holes 15 for the connection thereto of a vehicle coupling device such as a coupling hook 16 or a coupling hook and towing hitch arrangement 17, as shown as alternatives in Fig. 1. The plate 2 is provided with opposed flanges or wings 18, which are intended to project towards the chassis 4 and between which the first plate 1 can be located so that the second plate 2 can lie substantially covering the rearward facing face of the first plate 1 with respect to the vehicle. At the upper ends of the wings 18 are opposed holes 19 for engagement by the pin arrangement 10 to releasably secure the second and first plates 2 and 1 together. The pin arrangement 10 comprises a bolt 20, for traversing the holes 19 and one pair of the holes 9 in the flanges 8, and a spring cotter pin 21 to engage the bolt 20 to retain it in position. Removal of the pin 21 from engagement with the bolt 20 allows the latter to be removed from the holes 9 and 19 and the second plate 2 to be moved with respect to the first plate 1.

At the lower end of each of the wings 14 is pivotally connected thereto one end of one of the stays 3 by means of an angled lug 23 formed at the

end of the stay 3 and a pivot bolt 24. The other end of each stay 22 is adapted for pivotal connection to the chassis 4 by means of a second similar lug 25 and pivot bolt arrangement 26. Release of the second plate 2 from the first plate 1 therefore enables the second plate 2 to be pivoted with respect to the chassis 4 and the stays 3 about the pivot bolts 24 and 26.

In use, the frame is bolted to the rear underside of the vehicle chassis 4 by means of the attachment bracket 6 and the bolts 26 securing the stays 3. Typically, the attachment of the frame is carried out where the underside of the chassis 4 is sweeping upwards so that the first and second plates 1 and 2 depend from the chassis in substantially vertical planes. If the frame is to be used in conjunction with a coupling hook 16 or towing hitch arrangement 17 for towing a trailer, then the latter is bolted to the second plate 2 as shown in Fig. 1 and the second plate 2 is releasably coupled to the first plate by the pin arrangement 10 so that the second plate 2 is lower than the first plate 1. Typically, the lowest pair of holes 9 in the flanges 8 will be used for the connection of the second plate 2 to the plate 1. However, if the frame is not in use for towing, it and any hook 16 or hitch arrangement 17 attached thereto can be tucked away. This is accomplished by uncoupling the plate 2 from the plate 1 by removal of the pin arrangement 6 and pivoting the plate 2 about the pivot bolt 26 and to a lesser extent pivot bolt 24 so that it moves from the first position beneath the first plate 1 to a second position overlying the first plate 1. The pin arrangement 6 can then be re-employed in a different pair of holes 9 to couple the plate 2 to the plate 1



in this second position. The pivotal motion of the plate 2 and its second position are shown schematically in dashed lines in Fig. 1. Hence, the frame and coupling hook 16 or hitch 17 is less likely to plough the ground as the vehicle moves and the frame looks neater when not in use.

CLAIMS:

1. A frame for a vehicle coupling comprising a first plate adapted for connection to the chassis of a vehicle, a second plate adapted for connection to a vehicle coupling member and releasably connected to the first plate, and at least one stay pivotally connected at one end to the second plate and adapted for pivotal connection to the chassis of the vehicle so that in use, on release of the second plate from the first plate, the second plate can be pivoted by means of the stay from a first position with respect to the vehicle chassis towards the first plate and anchored in a second position which is closer to the vehicle chassis than the first position.

2. A frame for a vehicle coupling as claimed in claim 1 in which the second plate can be anchored in the second position by being releasably connected to the first plate.

3. A frame for a vehicle coupling as claimed in claim 2 in which the second plate can also, in the second position, substantially cover one side of the first plate.

4. A frame for a vehicle coupling as claimed in any one of claims 1 to 3 in which two stays are provided and pivotally connected to the second plate, one on each of two opposing sides thereof.

5. A frame for a vehicle coupling as claimed in any one of claims 1 to 4, in which the first plate has side flanges provided with a series of pairs of aligned holes spaced along the flanges and the second plate has side flanges provided with a pair of aligned holes, there being a pin arrangement for securing via the holes in the respective side flanges the second plate in a selected position relative to

7.

the first plate.

6. A frame for a vehicle coupling as claimed in any one of claims 1 to 5, in which the second plate is formed with an arrangement of spaced holes to permit securement thereto at a selected position to a vehicle coupling device.

7. A frame as claimed in claim 6 with a coupling hook adjustably secured to the second plate.

8. A frame for a vehicle coupling, substantially as hereinbefore described with reference to the accompanying drawings.